

LADY-BIRDS (COCCINELLIDAE, COLEOPTERA) FROM THE BULGARIAN BLACK SEA COAST AND THE STRANDZHA REGION

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No exhaustive faunistic studies have been made on the family of Coccinellidae in the Black Sea region and above all in the Strandzha hilly region of Bulgaria. Н е д е л - к о в (1909) reported 6 species. Ч о р б а д ж и е в (1926) and К а р н о ж и ц к и й (1950, 1954) published data on another 3 species. В и е л а в с к и (1958) published new localities of one species. Another two species — *Nephus nigricans* and *Scymnus doriae* were reported by F ü r s c h (1962; 1965). A new species — *Hyperaspis minois*, together with data on *Hyperaspis femorata* were reported by С а н е р а р и, F ü r s c h, К р е и с с л (1985). Finally, contributions with data on 13 lady-birds species were carried out by Й о р д а - н о в а (1986, 1987). Altogether 27 species have been reported so far from the region here concerned.

The author carried out research on Coccinellidae fauna in the region over the 1980—1990 period. Collected material was also presented by Dr M. Josifov, Dr V. Beschovski and T. Shtirkov, whom I cordially thank. The material is kept in the National Museum of Natural History, Sofia.

The limits of the studied coastal strip is up to 1000 m from the coastline, with exception of the Burgas Region, which includes most of the vicinity of Debel Village.

Insects were gathered chiefly from beaches, dunes, rocks, parks and orchards and vegetation along the coast.

The localities are situated as follows (from north to south): Cape Shabla, Cape Kaliakra; Balchik, resort Albena, Kranevo village; Varna, Cape Euxinograd and resort Drouzha, the estuary of the Kamchya River; Nessebur, Sveti Vlas Village and resort Slunchev Bryag; Pomorie; Burgas — lake Atanasovsko, lake Mandra, the villages Debel, Drachevo, Zidarovo, Tvarditsa, Djulevo, Livada, Novoseltsi; Sozopol — the village of Chernomorets, the Gradina and Kavatsite camping sites, the Arkutino marsh, the Ropotamo Reserve; Kiten; Tsarevo; Ahtopol, the Veleka River.

Localities in Strandzha region are as follows: Yasna Polyana Village; the river of Zelenikovets; the localities of Kachul, Katundere and Aidere; Mladezhko Village; Kroushevets village; Zvesdets village; Petrova niva locality; Fakiya village; Izgrev Village; the springs of the Ropotamo River; Malko Turnovo, the motel.

This study is a result of the processing and analysis of the material, including faunistic and phenological data (Table 1), as well as giving ecological and zoogeographical characteristics of a total of 52 species.

Species new to the region are marked with an asterisk before the name; new faunistic data are signed with ⊕, those from the literature — with O. The subgenus *Mimopullus* (genus *Scymnus*) and the species *S. (M.) flagellisiphonatus* is new to the Bulgarian fauna. This represents particular zoogeographical interest as regards its so far known distribution: Dalmatia, Italy, Tunisia, Egypt and Syria.

Table 1

Species composition, Phenology and Locations

Species	Sha- bla	Bal- chik	Var- na	Nes- sebur	Bur- gas	Cher- nomo- rets	Sozo- pol	Ki- ten	Tsa- revo	Ahto- pol	Stran- dzha	Pheno- logy data
1	2	3	4	5	6	7	8	9	10	11	12	13
<i>Subcoccinella vigintiquatuor-</i> <i>punctata</i> (L.)		⊕			⊕							VI
* <i>Coccidula scutellata</i> (Herbst)					⊕		⊕					V-VI
<i>Stethorus punctillum</i> W s.	○		⊕		⊕	○	⊕					VI, IX-X
<i>Clitostethus arcuatus</i> (Rossi)			○								○	VI-VIII
<i>Scymnus (Scymnus) apetzi</i> Muls.			○				⊕					V-VI
<i>Sc. (s. str.) frontalis</i> (F.)	○										○	V, IX
* <i>Sc. (s. str.) apetzoides</i> Capra et Fürsch							⊕					V
* <i>Sc. (s. str.) quadriguttatus</i> Capra				⊕								VII
<i>Sc. (s. str.) mimulus</i> Capra et Fürsch			○									VI
<i>Sc. (s. str.) interruptus</i> (Goetze)	○		○		⊕				⊕	⊕		VI, IX
<i>Sc. (s. str.) rubromaculatus</i> (Goetze)	○		○						⊕		○	V-IX
<i>Sc. (s. str.) doriae</i> Capra			○									
<i>Sc. (Pullus) auritus</i> Thunb.			⊕	⊕				⊕		⊕	○	V-VIII
<i>Sc. (Pullus) subvillosus</i> (Goetze)	○										○	VI-IX
* <i>Sc. (Pullus) suturalis</i> Thunb.											⊕	V
<i>Sc. (Pullus) fraxini</i> Muls.			⊕					○	⊕		⊕	VII-IX
* <i>Sc. (Neopullus) haemorrhoidalis</i> Herbst					⊕							VI
* <i>Sc. (Mimopullus) flagellispionatus</i> Fürsch			⊕									VII
<i>Nephus (Nephus) ludyi</i> Muls.	○											VIII
<i>N. (Bipunctatus) nigricans</i> W s.	○											VIII
<i>N. (Bipunctatus) bipunctatus</i> Kug.	○											VIII
<i>Hyperaspis reppensis</i> Redt.								○				
<i>Hyperaspis femorata</i> Motsch.						○						
<i>Hyperaspis minois</i> Fürsch				○								VI
* <i>Hyperaspis campestris</i> (Herbst)								⊕				IX
* <i>Chilocorus bipustulatus</i> (L.)			⊕				⊕		⊕			V, IX
* <i>Exochomus quadripustulatus</i> (L.)									⊕		⊕	V-IX
* <i>Exochomus nigromaculatus</i> (Goetze)				⊕	⊕			⊕			⊕	VI-VII
* <i>Platynaspis luteorubra</i> (Goetze)			⊕		⊕						⊕	IX, XI
* <i>Hippodamia (Hippodamia) tredecim-</i> <i>punctata</i> (L.)				⊕								VI
<i>Hippodamia (Semiadalia) undecim-</i> <i>notata</i> Schneid		⊕	○		⊕							V-X
<i>Hipp. (Adonia) variegata</i> (Goetze)	⊕	⊕	⊕	⊕	⊕	○	⊕				⊕	V-IX
<i>Anisosticta novemdecimpunctata</i> L.			○		○							VII-X
<i>Bulaea lichatschovi</i> (Humm)	○	○	○	⊕	⊕			⊕				VI-IX
* <i>Tytthaspis sedecimpunctata</i> L.					⊕			⊕			⊕	VI-VIII
<i>Adalia bipunctata</i> (L.)			⊕	○		○			⊕		⊕	VI-X
* <i>Adalia decempunctata</i> (L.)									⊕		⊕	VIII-X
<i>Coccinella septempunctata</i> L.		⊕	⊕	⊕	○	⊕	○				⊕	VI-IX
* <i>C. quinquepunctata</i> L.					⊕		⊕					VI
<i>C. undecimpunctata</i> L.			○		⊕	○	⊕	○			⊕	VI-VII
* <i>Coccinula quatuordecimpustulata</i> L.				⊕	⊕				⊕		⊕	V-VIII
* <i>C. sinuatmarginata</i> (Fald.)											⊕	V
* <i>Oenopia lyncea</i> Rosenh.											⊕	V-IX
* <i>Oenopia conglobata</i> (L.)									⊕		⊕	VIII
<i>Harmonia quadripunctata</i> (Ponnt.)			⊕	○	○		⊕		⊕		⊕	VI-VIII

1	2	3	4	5	6	7	8	9	10	11	12	13
* <i>Myrrha octodecimguttata</i> (L.)							⊕					VI
<i>Calvia</i> (<i>Calvia</i>) <i>quinquedecimguttata</i> (L.)											⊕O	V
* <i>C. (Calvia) quatuordecimguttata</i> (L.)											⊕	VI
* <i>C. (Propylaea) quatuordecimpunctata</i> (L.)	⊕	⊕			⊕				⊕		⊕	V – VIII
* <i>Vibidia duodecimguttata</i> (P o d a)	⊕								⊕	⊕	⊕	VIII – IX
* <i>Psyllobora vigintiduopunctata</i> (L.)	⊕				⊕							VI
* <i>Tetrabrachys connatus</i> P a n z e r							⊕					VI

ECOLOGICAL NOTES

Lady-birds show some specialization related to certain phytocoenoses, however not particularly linked with specific plant species.

Species variety in coastal areas is higher (44 spp.) as compared with that of the Strandzha Mountain (25 spp.). Here are represented the genera *Hyperaspis* and *Nephus* and the species *Subcoccinella 24-punctata*, *Scymnus apetzi*, *Sc. mimulus*, *Sc. (Neopullus) haemorrhoidalis* and *Bulaea lichatschovi* inhabit only open xerothermic biotopes, common along the Black Sea coast. The latter species (*B. lichatschovi*) is known as a halophylous one. The species *Sc. (Pullus) suturalis*, *Coccinula sinuatomarginata*, *Oenopia lyncea* and *Calvia quinquedecimguttata*, established in Strandzha, are related to forestal plant communities, thus lacking in material of Coccinellidae from the Coast. An exception is the xerophilous *Coccinula sinuatomarginata*, which differs from the related species *Coccinula quatuordecimpustulata* — a mesophylous one.

The hygrophylous *Coccidula scutellata*, *Hippodamia tredecimpunctata*, *Hipp. (Semiadalia) undecimnotata*, *Tetrabrachys connatus* and *Anisosticta novemdecimpunctata* were found in humid biotopes — along wet sand, weeds and rocks along the coast.

Following species, linked with mixed biotopes, have been established here along the coast only:

Scymnus quadriguttatus, *Sc. (Mimopullus) flagellisiphonatus* and *Myrrha octodecimguttata* — on trees in gardens and parks;

Chilocorus bipustulatus and *Coccinella quinquepunctata* — on trees and shrubs;

Stethorus punctillum, *Scymnus interruptus* and *Nephus nigricans* — on trees, shrubs and grasses.

As dominating appear following species: *Adonia variegata*, *Adalia bipunctata*, *Propylaea quatuordecimpunctata*, *Harmonia quadripunctata*, *Pullus auritus*. Most numerous are the collections of *Bulaea lichatschovi* (end of August 1981) and *Semiadalia undecimnotata* (June 1990).

Ecological data are based chiefly on observations of the author.

Table 2

Distribution of species according to zoogeographic characteristics

Zoogeographic category	Number of species	Ratio in % related total number
Cosmopolitan	2	3,85
Holarctic	4	7,70
Palaearctic	16	30,77
Southern Palaearctic	7	13,46
Eurosiberian	9	17,30
European	6	11,54
Mediterranean	8	15,38

Species distribution is after H o r i o n (1961) and I a b l o k o f f - K h n z o r i a n (1982).

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КАЛИНКИ (COCCINELLIDAE, COLEOPTERA) ОТ БЪЛГАРСКОТО ЧЕРНОМОРСКО КРАЙБРЕЖИЕ И СТРАНДЖА

ВАСИЛА ЙОРДАНОВА

(Резюме)

Съобщават се резултатите от проучването на 52 вида калинки от българското черноморско крайбрежие (1000 m от морския бряг) и планината Странджа. За първи път за изследваната област се съобщават 25 вида. Материалът е събиран

от 41 находища (28 от крайбрежието и 13 от Странджа) в периодите 1980—1982 и 1986—1990 г. Видовият състав е представен в табл. 1 с обобщени находища и фенологични данни (⊕ — нови данни, ○ — литературни данни). Направен е екологичен преглед на установените видове. Най-многобройни са видовете (29), обитаващи ксеротермни биотопи: 13 вида от черноморското крайбрежие, от Странджа — 16. Свързаните само с дървесна растителност видове са 12, хигрофилите — 5, еврибионтите — 3. Интересен зоогеографски факт е установяването у нас на *Scymnus (Mimopullus) flagellisiphonatus*. При зоогеографския анализ групирането на видовете според тяхното разпространение е следното: палеарктични — 16, евросибирски — 9, медитерански — 8, южнопалеарктични — 7, европейски — 6, холарктични — 4, космополити — 2 вида.